1. A pressure-balanced battery for powering downhole drilling components in a subterranean environment, the pressure-balanced battery comprising:

a battery; and

a housing enclosing and sealing a volume containing the battery, the housing being expandable and contractible to balance pressure internal to the housing with pressure external to the housing;

2. The pressure-balanced battery of claim 1, wherein the housing is in operable communication with downhole fluids.

3. The pressure-balanced battery of claim 1, wherein the housing is integrated into the annular structure of a downhole tool.

4. The pressure-balanced battery of claim 1, wherein at least a portion of the housing is at least one of machined, milled, cast, and forged into a downhole tool.

5. The pressure-balanced battery of claim 1, wherein the battery comprises a plurality of cells electrically connected in at least one of series, parallel, and a combination thereof, within the housing.

6. The pressure-balanced battery of claim 1, further comprising at least one battery terminal, connected to the battery, accessible through an opening in the housing.

7. The pressure-balanced battery of claim 1, wherein the battery comprises an electrolyte selected from the group consisting of a fluid electrolyte and a solid electrolyte.

8. The pressure-balanced battery of claim 1, wherein the battery is a fuel cell.

9. The pressure-balanced battery of claim 1, wherein the battery further comprises a plurality of components held together by a flexible casing, wherein the shape of the flexible casing is selected from the group consisting of a substantially planar shape, a substantially cylindrical shape, and a substantially semi-cylindrical shape.

10. The pressure-balanced battery of claim 1, wherein the battery is installed into at least one recess formed in the wall of a downhole tool.

11. The pressure-balanced battery of claim 1, wherein the battery is in operable communication with at least one of the group consisting of a downhole network, other downhole tools, and transmission elements configured to transmit information between downhole tools.

12. The pressure-balanced battery of claim 1, further comprising a signal-conditioning module to modify characteristics of power output from the battery.

13. The pressure-balanced battery of claim 1, wherein the battery is rechargeable.

14. A pressure-balanced battery for powering downhole drilling components in a subterranean environment, the pressure-balanced battery comprising:

a battery; and

a housing enclosing and sealing a volume containing the battery, the housing comprising:

a substantially rigid portion;

a resilient portion deformable to vary the volume of the housing, the resilient portion balancing pressure internal to the housing with ambient pressure external to the housing.

15. The pressure-balanced battery of claim 14, wherein the resilient portion is in operable communication with downhole fluids.

16. The pressure-balanced battery of claim 14, wherein the housing is integrated into the annular structure of a downhole tool.

17. The pressure-balanced battery of claim 14, wherein the rigid portion is at least one of machined, milled, cast, and forged into the structure of a downhole tool.

18. The pressure-balanced battery of claim 14, wherein the battery comprises a plurality of cells electrically connected in at least one of series, parallel, and a combination thereof, within the housing.

19. The pressure-balanced battery of claim 1, further comprising at least one battery terminal, operably connected to the battery, accessible through an opening in the housing.

20. A method for providing power to downhole drilling components in a subterranean environment, the method comprising:

providing a battery;

providing a sealed housing for the battery, the sealed housing having a resilient portion flexible to vary the volume within the housing; and

flexing the resilient portion to balance pressure internal to the housing with pressure external to the housing;

21. The method of claim 20, wherein flexing is actuated by communication between downhole fluids and the resilient portion of the housing.